



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

MAY 21 2013

Mr. James H. Welsh, Commissioner
Office of Conservation
Louisiana Department of Natural Resources
P.O. Box 94275
Baton Rouge, LA 70804-9275

CERTIFIED MAIL -- RETURN RECEIPT REQUESTED

Dear Mr. Welsh:

This letter transmits EPA's end-of-year (EOY) evaluation of Louisiana's Underground Injection Control (UIC) program for Fiscal Year 2012 (FY12). Region 6 UIC oversight staff provided the draft FY12 program review to Mr. Joe Ball of your staff on April 10, 2013. Mr. Ball commented on our draft EOY evaluation on or before April 23, 2013, and any appropriate changes are included.

Oversight of State UIC programs remains a priority for Region 6. I commend the staff of OC's Injection and Mining Division (IMD) in effectively meeting or exceeding FY12 UIC grant workplan program targets except for routine inspections of Class I and III wells and witnessed Class I mechanical integrity tests. We also are reviewing the application of OC's Intra-office Policy Statement IMD-GS-09 on determining the maximum authorized injection surface pressure (MASIP) for Class II injection, specifically disposal permits issued to Arcadia Gas Storage, LLC, near Arcadia, Louisiana. My staff have also communicated with OC during the Bayou Corne sinkhole response and participated in the associated "science workgroup" designated to investigate the cause and management of this disaster. Our oversight of both IMD-GS-09 and Bayou Corne will continue into FY13.

If you wish to discuss any aspect of this EOY evaluation, call me at (214) 665-7101, or your staff may call Mr. Philip Dellinger at (214) 665-8324. If your staff has specific questions about UIC grant performance, please contact Mr. Michael Vaughan at (214) 665-7313 or Mr. Mike Frazier at (214) 665-7236 for questions regarding EPA's program oversight.

Sincerely yours,

William K. Honker, P.E.
Director
Water Quality Protection Division

Enclosure

cc: Joe Ball, OC/IMD Director, w/encl.
Laurence Bland, OC/IMD Assistant Director, w/encl.

**FISCAL YEAR 2012 END-OF-YEAR REVIEW
LOUISIANA DEPARTMENT OF NATURAL RESOURCES (LDNR)
OFFICE OF CONSERVATION
UNDERGROUND INJECTION CONTROL (UIC) PROGRAM**

EXECUTIVE SUMMARY

This oversight report details the significant accomplishments of Louisiana's Office of Conservation (OC) Injection Mining Division (IMD) in meeting the fiscal year 2012 (FY12) UIC grant workplan commitments between July 1, 2011 and June 30, 2012. EPA oversight discussion is presented in the second part of this annual evaluation required in the State/EPA Primacy memorandum of agreement between our agencies. The State UIC program met or exceeded most reporting and targeted field activities within the annual State UIC grant workplan. As in the UIC grant workplan for the past several fiscal years, the grant workplan for fiscal year 2013 again includes submission of a program revision package for the State Class II program.

FY12 UIC GRANT END-OF-YEAR ACCOMPLISHMENTS:

FY12 STAG Funding—The federal FY12 grant allotment for the State of Louisiana's UIC program administered by the OC was \$358,000 in UIC programmatic funds. This allotment was awarded as the annual State and Tribal Assistance Grant (STAG) to OC during FY12. The OC also received \$38,580 in UIC Special Project funds during FY12.

Workplan Deliverables—Table 1 identifies State program updates and other deliverables submitted pursuant to the FY12 STAG UIC grant workplan. IMD staff submitted to Region 6 all deliverables as mandated in the above referenced workplan. In addition, Table 2 shows the degree of accomplishment for selected program activities targeted in the FY12 UIC grant workplan. LDNR's efforts on these fundamental program activities continue to be impressive.

Quality Assurance Annual Update—Pursuant to regulatory requirements and policies of EPA, all environmental programs conducted on behalf of EPA will establish and implement effective quality systems. The Quality Management Plan (QMP) and Quality Assurance Project Plan (QAPP) must be updated annually. If both the QMP and QAPP are current and valid, EPA requires each state to annually certify that both plans are current by submitting updated signatory pages and organizational charts as applicable. As part of the FY13 STAG UIC grant workplan, OC staff committed to submit to Region 6 annual quality assurance certifications and new signatory pages before the expiration dates. The FY13 QMP [QTRAK #12-326] was approved by Region 6 on August June 18, 2012, and expires on June 18, 2013. The FY13 QAPP [QTRAK #13-177] was approved by Region 6 on February 12, 2013, and expires on February 12, 2014.

Table 1. Grant deliverables in FY12 UIC Workplan.

Grant Deliverable	Due Date	Date Received
Quarterly Reports (EPA Forms 7520) and Compliance Order Tracking Report	January 31; April 30; July 31; October 31	Submitted on schedule
FY12 Grant Application	May 1, 2011	Application Received— April 18, 2011
FY12 Grant Workplan	May 1, 2011	Workplan Received— April 18, 2011 Approved— April 19, 2011
Final Financial Status Report (FY12)	September 30, 2012	Received, and approved on September 19, 2012
Annual UIC Program Report (FY12)	July 30, 2012	July 19, 2012
Update on Program, Regulatory or Statutory Changes	July 30, 2012	July 19, 2012
Annual QMP/QAPP Updates*	QMP QAPP	Received—June 18, 2012 Approved— June 18, 2012 Expires—June 18, 2013 Received— February 11, 2013 Approved— February 12, 2013 Expires—February 12, 2014
UIC Well Inventory for FY12	December 31, 2012	December 14, 2012

* The Quality Management Plan (QMP) and Quality Assurance Project Plan (QAPP) are updated annually for tracking any program modifications, concurrences, and/or organizational changes.

Table 2. FY12 Workplan Target and End-of-Year Accomplishments, Program activities and end-of-year level of accomplishment for grant related activities.

Program Activity	Well Class	FY12 Target	Actual End-of-Year Values	Target %
MITs (PART I and II)	I	21	35	Over 100%
	II (SWD & EOR)	800	993	Over 100%
	II (Storage)	15	16	Over 100%
	III	15	21	Over 100%
ROUTINE INSPECTIONS	I	80	75*	95%
	II (SWD & EOR)	2,500	2,793	Over 100%
	II (Storage)	40	65	Over 100%
	III	20	15*	95%
WITNESSED MITs (PART I only)	I	80	67*	87%
	II (SWD & EOR)	1,300	1,417	Over 100%
COMPLIANCE REVIEWS ‡	I	36	36	100%
	II (SWD & EOR)	500	531	Over 100%
	II (Storage)	35	47	Over 100%
	III	25	36	Over 100%

‡ In-house review of well file by OC personnel ensuring compliance with permit or regulations.

* The shortfall for Class I and Class III due to the death of a field inspector during the fiscal year. Budget cuts have not allowed the filling of the position.

PROGRAM OVERSIGHT DISCUSSION:

State Class II UIC Program Revisions—The Safe Drinking Water Act requires EPA to assure that all State UIC Primacy programs remain effective in protecting underground sources of drinking water. Since many aspects of the State UIC program have changed since the last EPA approved revisions in 1995, submission of a Class II program revision was included as a deliverable in the Louisiana UIC grant workplan for several past fiscal years and will continue to be included until submitted. We anticipate receiving a primacy program revision submission for Louisiana Class II injection program during State Fiscal Year 2013.

Class II MITs Performed Compared to UIC Well Inventory—In FY12, OC performed 1,009 two-part mechanical integrity tests (MITs) on Class II wells, including produced water disposal, enhanced recovery, and liquid petroleum storage wells. The first part of an MIT is an external evaluation of the potential for upward migration between the long-string casing and formation, typically an evaluation of a cement bond log by IMD engineer staff. LDNR's seven UIC field inspectors witness the second part MIT, typically a scheduled internal pressure test of the annular space between the tubing, packer, and long-string casing. Based on the actual values reported in OC's annual report required in the grant workplan, we assume that every Class II well in Louisiana is likely evaluated for mechanical integrity at least once during the last five years as required by EPA approved State UIC regulations.

Table 3. Number of Class II MITs (two-part) conducted between FY2003 and FY2012, annual inventory and variance between number of five-year MITs and annual inventory.

Fiscal Year	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
Annual MITs (Two-part)	1,009	1,084	1,177	825	760	747	777	923	945	690 _γ
Cumulative MITs Last five-year Σ	4,855	4,593	4,286	4,032	4,152	4,082	3,824	3,816	3,711	3,339
Annual Inventory	3,687	3,676	3,731	3,058	ε 3,020	ε 3,004	ε 2,930	ε 3,111	3,137	3,139
Variance (MITs v. Inventory)	1,168	917	565 _—	974	1,132	1,078	894	705	574	200

ε State UIC program well inventory of testable Class II wells as of end of state fiscal years, respectively.

— Variance based on State UIC program annual well inventory; 2010 Class II inventory value included UIC-14 disposal wells which are not included in reported UIC MIT values since FY10.

γ Low value partially a result of resignation of an engineering staff member as reported in State annual UIC report, FY 03.

Well Inventory v. Annual Reporting—The Louisiana UIC well inventory values reported since fiscal year 2002 are shown by well class in Chart 1. The OC Injection and Mining Division (IMD) historically reports the total UIC well inventory by the various classes of injection/disposal wells as requested by EPA near the end of each calendar year, last reported on December 14, 2012. Chart 2 compares the Class II well inventory to the number of Class II UIC well annual operator reports submitted annually since 2002; most Class II well operators submit the required annual reports in Spring following the calendar year reporting period.

For the past three years, the Class II well inventory has been above the reported value in 2002, with a decreasing value since FY2009 when the well inventory again included UIC-14 permits for disposal of reserve pit fluids. UIC-14 operators are required to report daily and at the conclusion of operations, but are not required to report annual UIC-10 forms. IMD mailed 3,248 reporting forms to 683 operators in February 2012. During the preparation of this report, IMD had received 3,244 completed Forms UIC-10 from 675 Class II operators, with only four outstanding well reports. LDNR continues to focus program efforts toward operator compliance with monitoring and reporting requirements with outstanding results.

Chart 1. Well Class UIC Well Inventory FY2002-FY2012

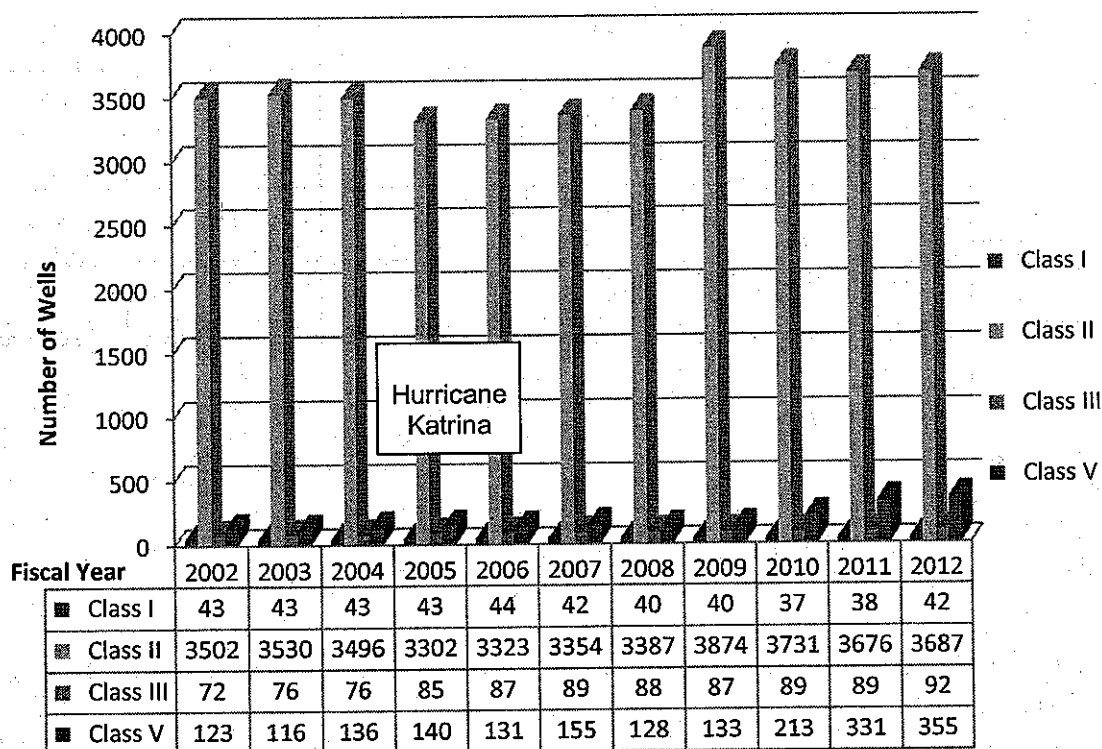


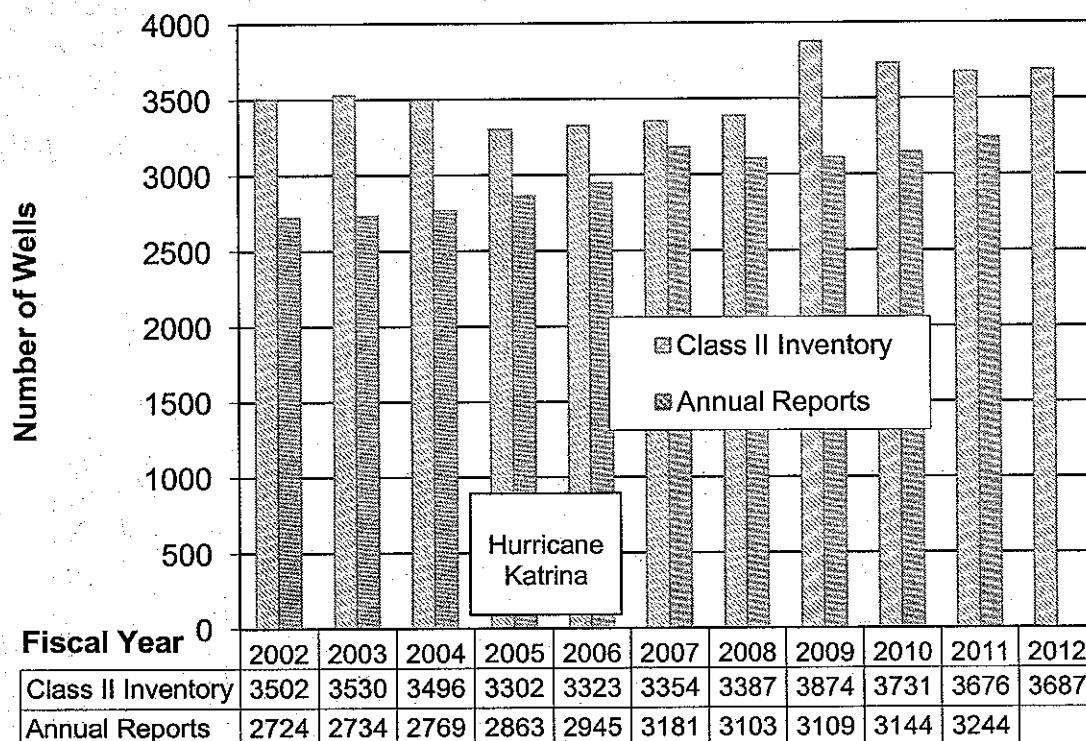
Table. 4

**Louisiana Underground Injection Control Program
Injection / Disposal Well Inventory
June 30, 2012**

Well Class	Well Type Description		Wells Under Construction	Wells Active	Wells Temporarily Abandoned or Orphaned	Wells Plugged & Abandoned
1	Industrial Hazardous Waste		4	15	1	51
	Industrial NonHazardous Waste		0	21	0	32
2	Saltwater Disposal		103	2693	161	3316
	Enhanced Oil Recovery		1	496	9	1164
	Reserve Pit Disposal		0	20	0	0
	Hydrocarbon Storage in Salt Dome Caverns	Crude Oil	1	88	0	4
		Liquefied Petroleum Gas (LPG)	0	88	1	18
		Natural Gas	0	26	0	2
3	Mineral Solution Mining		10	82	0	2645
5	All Other Wells		67	288	0	247
SUBTOTAL			186	3817	172	
TOTAL WELL INVENTORY			4175			

NOTE: These values are reported for the end of the State fiscal year, June 30, 2012, and vary from FY12 inventory values elsewhere in this report as reported to EPA annually in December for state grant calculations. In addition, this table includes Class 2 gas storage wells that are not included in annual inventory reports.

**Chart 2. Class II Inventory v. Annual Reports
FY2002-FY2012**

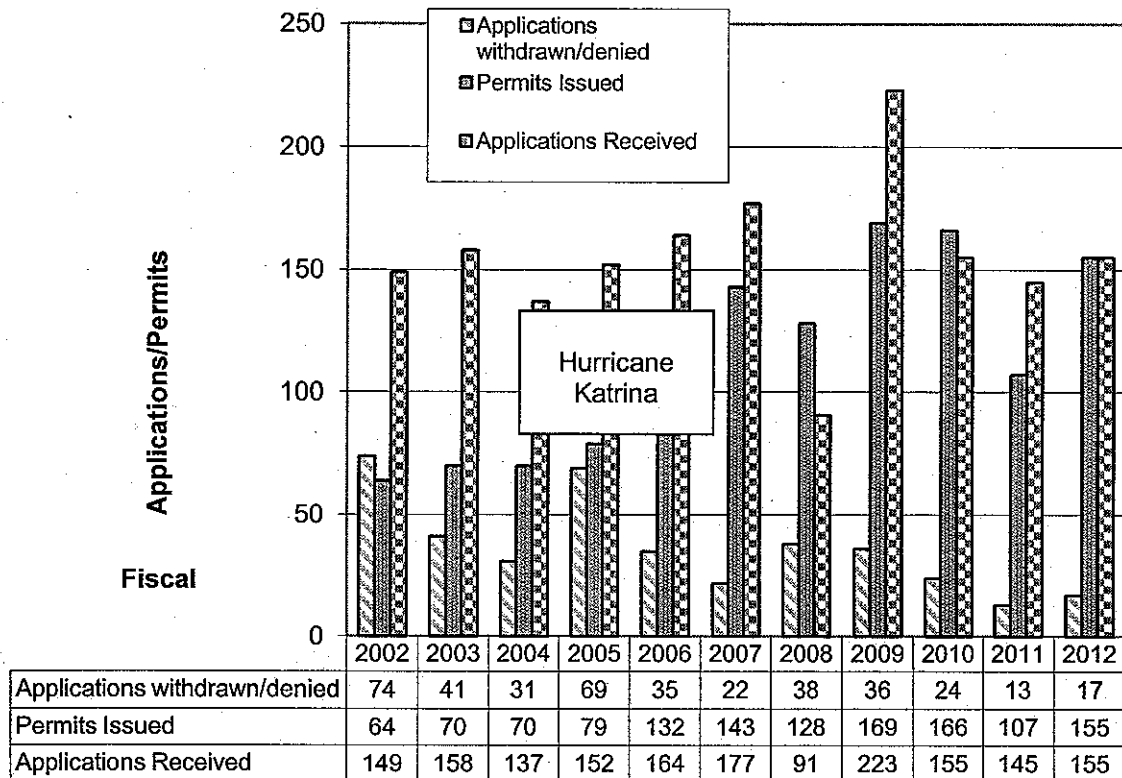


Permitting and Enforcement Actions—In submitted EPA Form 7520-1 for the FY12 reporting period between October 1, 2011, and September 30, 2012, LDNR received 15 Class I, 766 Class II, 45 Class III, and 117 Class V permit applications. The Class II permits included all Class II permits, including workovers, recompletions, conversions, mud pit disposal into production well annuli, enhanced recovery and saltwater disposal permits. During the same reporting period, the State program issued new or reissued permits for 15 Class I, 752 Class II, 38 Class III, and 187 Class V wells and reported only 34 Class II and 2 Class V permit applications withdrawn or denied. Historically, Chart 3 depicts the number of Class II permit applications received, issued, or withdrawn or denied as reported by OC in the annual State UIC Program report based on State fiscal year values. More specifically, Chart 3 values represent applications/permits for only saltwater disposal wells while the corresponding reported permit values on EPA Form 7520-1 include all permits for the federal FY12 reporting period. During the same reporting period, over 3,000 wells within the fixed quarter-mile area of review of Class II injection well applications were reviewed for necessary corrective action. Of those reviewed wells, LDNR identified over 550 Class II wells for corrective action consideration; typical corrective action includes formation pressure monitoring and migration potential (MIGPOT) determination. In addition, injection volume and/or pressure limits may also be used as corrective action.

Also from FY12 7520 forms, LDNR staff inspected 36 Class I, 1,884 Class II, 28 Class III, and no Class V wells, with the largest percentage of mechanical integrity failure in the Class II arena. Approximately 13 percent of the Class II tests in FY12 (190 of 1419 wells) indicated failed mechanical integrity. Previous failure rates from FY11, FY10, FY 09, FY08, and FY07 were 13%,

16%, 9%, 7%, and 9%, respectively. The percentage of pressure test failures since FY07 range between 7%-16% as expected for Class II injection wells. Only one mechanical integrity test (MIT) failure was reported for 73 Class I well tests in FY12. Chart 4 shows assessed and collected penalty amounts since fiscal year 2001. The State program reported collecting \$58,000 in civil penalties in FY11, an increase from \$25,400 collected in FY10; in FY12, the amount dropped to \$23,600.

**Chart 3. Class II Disposal Well Permit Activities
FY2002-FY2012**



Subsurface Injection of Drilling Wastes into Production Wells—Since FY2009, the state Injection and Mining Division has included information in annual reports to EPA about its UIC-14 permitting program, including the number of production wells authorized to dispose of reserve pit fluids via annular injection (injection between the surface and long-string casings). EPA recognizes and supports the state's Class II classification of disposal of drilling wastes into production wells. This renewed reporting parameter will assist EPA oversight of drilling waste disposal through fracture slurry injection into production wells. Chart 5 below shows the number of oil and gas production wells permitted between 2002 and 2012 and the number of corresponding State UIC-14 authorizations during the same period. The number of drilling permits issued during FY12 decreased approximately 13% while the number of annular disposal permits also decreased proportionately by approximately 36% from FY11 values. Historically, the number of annular mud disposal permits issued each year has ranged from 21% to 25% of the number of oil and gas wells permitted during that same period; for state FY 2012, the percentage is less than 5%. Most likely, operators are recycling drilling muds or re-using the same drilling fluids to drill multiple wells; many shale-gas production wells are drilled horizontally from the same drill site.

Chart 4. UIC Penalties and Fines FY2002-FY2012

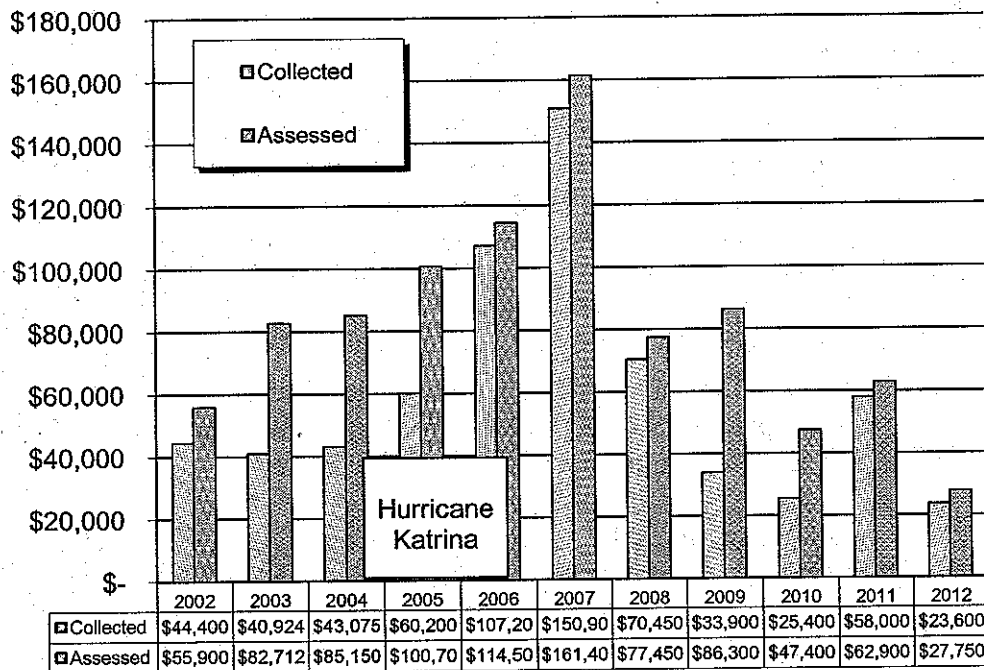
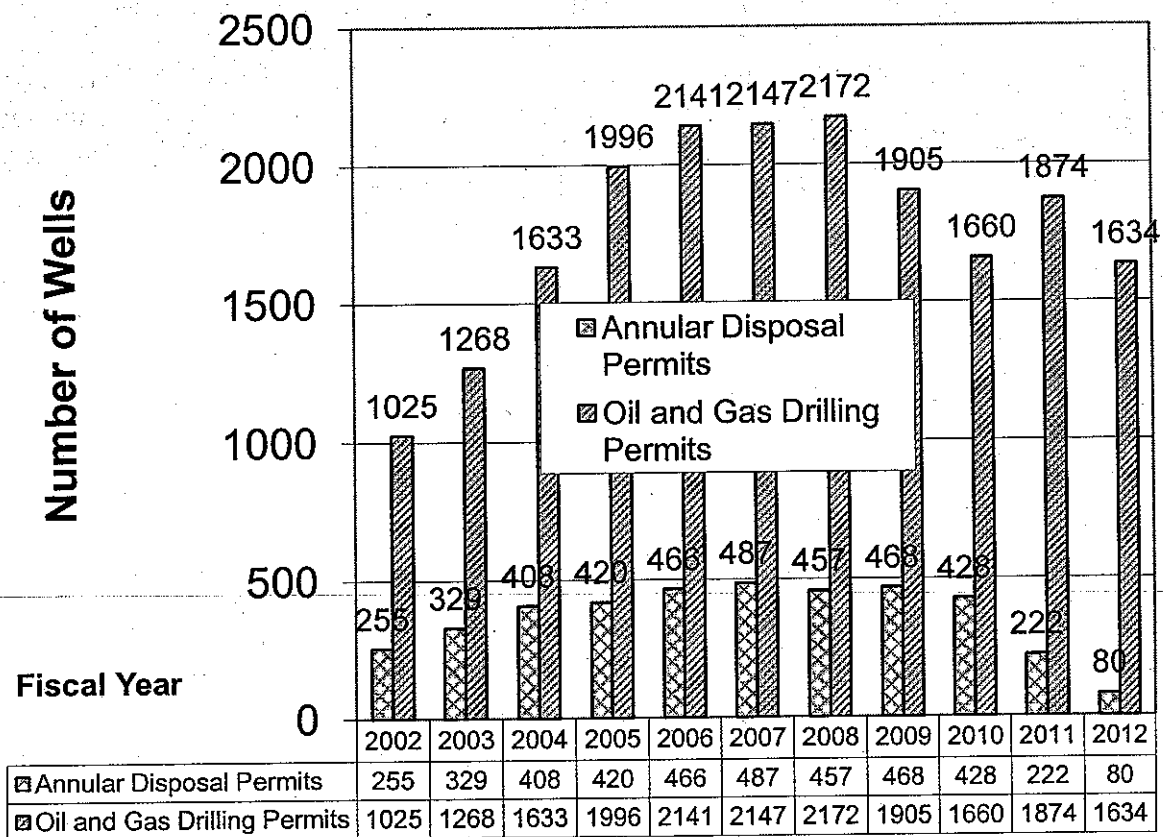


Chart 5. Permitted Oil and Gas Wells versus Authorized Drilling Waste Disposal into Production Wells FY2002-FY2012.



Oversight Travel and FY12 Permit Issues—During State FY12, EPA staff visited Arcadia Gas Storage, LLC, Class III brine mining operations and associated Class II disposal wells near Arcadia, Bienville Parish, Louisiana. Reported flows to surface from nearby abandoned oil and gas wellbores initiated an investigation by Region 6 of pressure build-up in Class II disposal wells approved under OC's intra-office policy IMD-GS-09. This policy guides State UIC program evaluation of requested variances from LAC 43:XIX.405.B.4 which limits surface injection pressures to 75 percent of the disposal formation's fracture gradient. With formation fluid levels measuring well above ground level, the pressure build-up in the primary disposal zone at the Arcadia facility appears associated with flows to surface through abandoned well bores well beyond the standard ¼-mile area of review. EPA requested and received sampling data from the State program to evaluate any impact on the local Sparta Aquifer, a primary drinking water resource of the City of Arcadia. The protection standard for State UIC programs approved under Section 1425 of the Safe Drinking Water Act is that of "equivalent protection" not equivalent regulations. The applicable State UIC program regulations are those approved by EPA, which may or may not include intra-office policies. This topic will be further addressed in the FY13 annual evaluation.

The other oversight issue involves the collapse of a brine mining cavern created from mining salt through the Texas Brine, LLC—Oxy #3 Class III well near Bayou Corne, Assumption Parish, Louisiana. The State UIC program maintains primary enforcement responsibility and is an integral part of Louisiana's Emergency Response efforts. OC has proposed amending the current Class III state regulations as a result of this catastrophe; EPA is currently reviewing those regulations and will provide comment to OC as soon as possible. Since Louisiana maintains UIC regulatory primacy, EPA's role to date has been oversight and advisory in nature, especially participating in the State's Bayou Corne technical group and visiting the site on at least two occasions. Based on its initial review of proposed changes to State regulations for construction of Class III wells, EPA recommends changes to well plugging standards to include a cement plug in the salt neck. The State's management of the situation is ongoing; therefore, EPA will continue its oversight evaluation into the FY13 UIC program evaluation and possibly beyond. Two areas of our continuing oversight investigation include authorized disposal of waste in active salt mining caverns and new siting requirements to prevent cavern collapse similar to Bayou Corne.